

Research Article

Incidence, Prevalence of Dermatophytes in Clinically Suspected Fungal Skin Infections in Tertiary Care Hospital

Nighat Fatima^{1*}, Kalsoom Jawaid², Saba Amin³, Muhammad Farooq⁴, Aymon Shafi⁵

^{1*}Associate Professor, Dermatology, Multan Medical and Dental College and Ibn-e-Siena Hospital, Multan, Pakistan.

²Associate Professor, Dermatology, Allied Hospital Faisalabad Medical University, Faisalabad, Pakistan.

³Assistant Professor, Dermatology, Multan Medical and Dental College, Multan, Pakistan.

⁴Associate Professor and Head of Department, Department of Dermatology, Bakhtawar Amin Medical and Dental College, Multan, Pakistan.

⁵Assistant Professor, Dermatology, Bakhtawar Amin Trust Teaching Hospital, Multan, Pakistan.

Corresponding Author: Nighat Fatima

Associate Professor, Dermatology, Multan Medical and Dental College, Multan, Pakistan.

Email: dr.nighatfatima@gmail.com

Received: 28.05.2026, Revised: 09.08.2026, Accepted: 16.08.2026

ABSTRACT

Background: Dermatophytes are the most common fungal species that affect hair, skin, and nails. In order to prevent infections from spreading quickly, it is important to evaluate the prevalence of dermatophytes. This study was conducted to analyze the dermatophyte prevalence in patients with superficial cutaneous skin infection in the hospital.

Methods: This cross-sectional study was carried out over the course of a year (July 2024 to July 2025) by the departments of Dermatology in Ibn-e-Siena Hospital Multan. Samples were prepared for a wet mount potassium hydroxide solution preliminary screening test. Data was analysed using SPSS version 22.

Results: Seven hundred and thirty-seven (74%) of the 1000 skin samples were positive for dermatophytes. There were 86 (9%) non-dermatophytes. A total of 95 (8%) were identified as yeast, and 13 (1%) as mixed growth. The most common clinical type was shown to be tinea corporis, followed by tinea cruris. Patients between the ages of 21 and 40 made up the majority of the isolates.

Conclusion: In the hospital used for this study, dermatophytes were the most ubiquitous fungi causing superficial cutaneous skin infections. The most frequent skin infection in the population under study is tinea corporis. When assessing the causes of skin illnesses, it is crucial to take into account the reported incidence of dermatophytes (8%) in superficial skin infections. This will allow for an extra tailored approach in managing superficial skin infections.

Keywords: Dermatophytes, Superficial Skin Infection, Tinea Corporis, and Tinea Cruris.

INTRODUCTION

Despite major advancements in medicine, superficial fungal infections remain one of the common skin illnesses [1, 2]. Dermatophytes are the most common fungal species that affect hair, skin, and nails [3]. Dermatophytes, which affect keratinized epithelium, follicular unit, and nails fall under these infections. They generate keratinase enzymes, which facilitate keratin invasion and digestion by fungus [4].

Infections originating from dermatophytes are referred to as ring worm infections. The term ring worm is derived from the characteristic appearance. The prevalence of dermatophytosis is rising in the developing world, particularly in tropical nations [5, 6]. Nearly 20–25% of people worldwide are infected with one of the dermatophytosis

subtypes, ringworm infection, and 30–70% of adults carry these diseases asymptotically [7]. Dermatophytes are classified into three genera: Trichophyton species, Microsporum species, and Epidermatophyton species. Tinea capitis (scalp and hair), Tinea barbae (beard), Tinea corporis (trunk), Tinea cruris (groin), Tinea manuum (hands), Tinea pedis (foot), and Tinea unguium (nails) are used to categorise dermatophytosis by body areas [2, 8].

The various terminologies given to these are based on the site they affect. The fact that are frequently misdiagnosed as other illnesses makes this study of even greater importance [9]. Early diagnosis is therefore essential for effective care. In terms of distribution, incidence, epidemiology, and target hosts, the data collected from around the world

demonstrate significant geographic heterogeneity^[10]. Geographical location, health care system, climate (wind, temperature and humidity), crowding, environmental hygiene, cultural diversities, immigration, and socio-economic situations are the main contributing factors to these differences^[11, 12]. In order to prevent infections from spreading quickly, it is important to evaluate the prevalence of dermatophytes^[13].

The current study was aimed to determine the prevalence of dermatophytosis and the range of fungi species among patients receiving care at the teaching hospital.

MATERIALS & METHODS

This cross-sectional study was conducted over the course of a year (July 2024 to July 2025) at the Department of Dermatology in Ibn-e-Siena Hospital Multan. An aggregate of 1000 patients were included in this study. Dermatology Department provided samples for the investigation. Mycological culture and a potassium hydroxide mount were used to diagnose all of the samples.

All patients referred by the dermatology department having clinical diagnosis of a superficial fungal cutaneous infection were included, regardless of gender or age. Data was gathered using a self-made Performa. Scrapings were collected from the active margin and transferred in a pre-sterilized black chart paper, which kept the specimen dry and inhibited the growth of bacteria. There were two techniques used. First, samples were treated with 20% potassium hydroxide (KOH) mount. Before being transferred to glass slides for microscopic examination, scrapings were placed for 10–20 minutes in a petri dish or in

test tubes for skin and scalp, and overnight in cases of nail clippings. Low power (10X) and high power (40X) magnifications were used during the examination to look for fungi.

Data analysis was done using SPSS 22. P value considered statistically significant was less than 0.05.

RESULTS

Version 22 of IBM-SPSS was used to store and analyse the data. Baseline attributes were reported as 0 count and percentages. A bar chart was likewise used to graphically show the results of the investigation.

Smooth, retractile, lengthy, undulating, branched, and septate hyphal filaments with or without arthroconidiospores were seen in positive scrapings. Microscopically, prepared KOH slides were examined for the existence of beaded spherical formations (spores) or threadlike branching structures (hyphae).

According to the current study, 9332 patients visited the dermatology department over the course of a year. 1000 samples were taken from individuals with clinically suspected superficial fungal skin infections, and 737 (74%) of those samples tested positive for dermatophytes. The remaining 86 (8%), 95 (9%), and 13 (1%), however, were yeast and 13 (1%), mixed growth, respectively. Nevertheless, 69 (8%) of the subjects showed no increase. *Tenia* affects 8% of the population. Age distribution revealed that 9% of isolates were from patients aged 1 to 20; 49% from patients between the ages of 21 and 40; 32% from patients between the ages of 41 and 60; and 10% from patients who are older than 60. This survey found that the male to female ratio is 44% to 56%.

Table 1: Frequency of fungi among clinically suspected fungal infections

	N=1000	Percentage
Dermatophytes	737	74%
Non dermatophytes	86	8%
Yeast	95	9%
Mixed	13	1%
No growth	69	8%

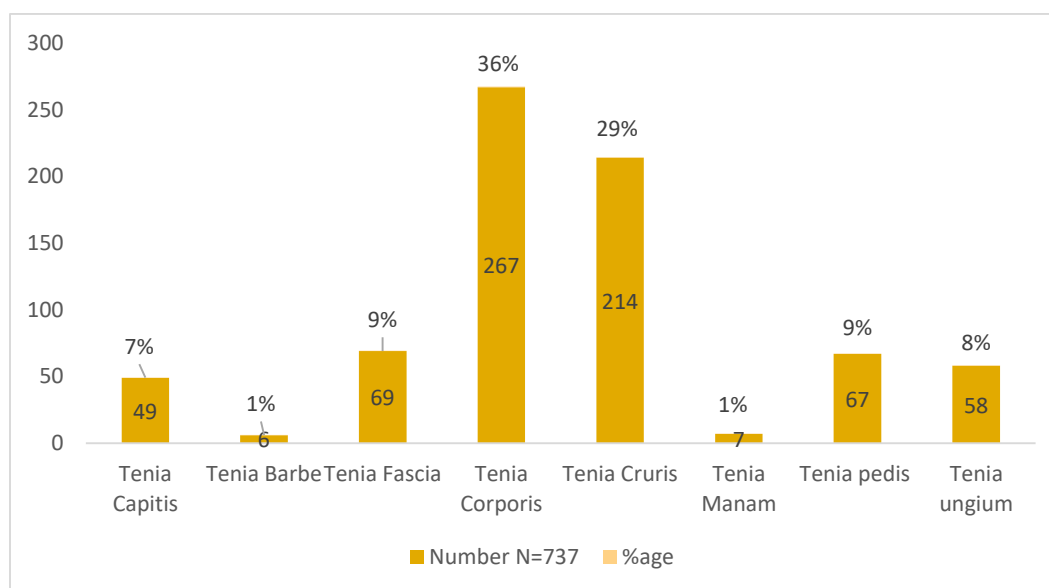


Figure 1: Prevalence of clinical types in superficial cutaneous infections

DISCUSSION

In the present study of the prevalence of dermatophytosis, females were slightly more affected than males (44% vs. 56%); similar findings were observed in Ethiopia [14], where females predominated (76.3%), and in India [15], where 64% of the population was female and 34% was male. However, research done in Egypt and Iceland produced different findings [16,17]. It is assumed that progesterone hormone has a crucial role in suppressing the multiplication of dermatophyte in vitro, which may account for the varying prevalence by gender [18]. Adults aged 21 to 40 were the most often afflicted age group; Sultan et al and Shazia et al reported the similar findings [19, 20]. Bakhtawar U et al & Alshehri et al found the disorder to be more frequent in children, which conflicts our findings [21,22].

In current study Tinea corporis is identified as the most common clinical type, accounting for 36% of cases. This finding correlates to that of Shazia (46%) and Sri Lanka, Iran (69.2%), while Ethiopia and Saudi Arabia saw distinctly different results of 10.8% and 21.4%, respectively [20, 23, 24, 14, 27].

Tinea corporis is the second most prevalent condition in this study, followed by tinea cruris 29%, whereas Rezaei found similar results in Iran with 15.4% and 20.7% [25] respectively.

Tinea capitis is 7%, which is comparable to a study from Iran that found T. capitis to be the least prevalent form in Ethiopia and India [24, 14, 27], where it was found to be 5.4% and 2.94% respectively. T. capitis was shown to be present in 22.3% and 22% in studies conducted in Saudi Arabia and Pakistan, respectively [20].

These variances are a result of many climatic elements in certain regions.

We confirm 9% Tinea Pedis instances, which is comparable to Shazia's study [20] conducted in Pakistan. Ethiopia's results (4.9%) were comparable to our results [14]. T. pedis were found in Saudi Arabia in 3.8% and 17% of cases, according to Rashdian's study from Iran [23]. Rezaei reported that Tinea pedis was found in 43.4% of patients in Iran, which was a different pattern from what had previously been observed [25]. In our study, Tinea unguium was isolated at a frequency of 8%, which is nearly identical to Shazia's research but different from studies done in Ethiopia (51.1%), Saudi Arabia (17.9%), and India (27.85%) [20,14].

CONCLUSION

In the present study, we discovered that females are more likely than males to develop dermatophytosis. While it can occur at any age, it is common in those between the ages of 21 and 40. Tinea pedis, Tinea cruris and Tinea corporis were shown to be the predominant clinical presentations. The results obtained from this study demonstrate the significance of researching and analyzing the prevalence of various fungus in order to properly treat superficial skin infections.

Conflict of Interest: Authors declared no conflict of interest.

Funding: Nil

REFERENCES

1. Araya S, Tesfaye B, Fente D. Epidemiology of dermatophyte and non-dermatophyte fungi infection in Ethiopia. *Clin Cosmet Investig Dermatol*. 2020;291-7. <https://doi.org/10.2147/CCID.S246183>
2. Shields BE, Rosenbach M, Brown-Joel Z, Berger AP, Ford BA, Wanat KA. Angioinvasive fungal infections impacting the skin: background, epidemiology, and clinical presentation. *JAAD*. 2019;80(4):869-80. <https://doi.org/10.1016/j.jaad.2018.04.059>
3. Howell SA. Dermatopathology and the diagnosis of fungal infections. *Br. J. Biomed. Sci*. 2023; 80:11314. <https://doi.org/10.3389/bjbs.2023.11314>
4. Lindsø Andersen P, Jørgensen IF, Saunte DM, Jemec GB, Pedersen OB, Brunak S. An increase in specialist treatment for onychomycosis: an unexplained tendency. A retrospective study of patients treated for onychomycosis in Danish hospitals from 1994 to 2018. *JFungi*. 2022;9(1):33. <https://doi.org/10.3390/jof9010033>
5. AL-Khikani FH. Dermatophytosis a worldwide contiguous fungal infection: Growing challenge and few solutions. *BBRJ*. 2020; 4(2): 117.10.4103/bbrj.bbrj_1_20
6. Basak P, Mallick B, Pattanaik S. Prevalence of dermatophytic infections including antifungal susceptibility pattern of dermatophytes in a tertiary care hospital. *Int J Res Med Sci*. 2019;7(3):699-705. <http://dx.doi.org/10.18203/2320-6012.ijrms20190461>
7. Petrucelli MF, Abreu MH, Cantelli BA, Segura GG, Nishimura FG, Bitencourt TA, et al. Epidemiology and diagnostic perspectives of dermatophytoses. *JFungi*. 2020;6(4):310
8. Janssen NA, Brüggemann RJ, Reijers MH, Henriët SS, Ten Oever J, de Mast Q, et al. A multidisciplinary approach to fungal infections: one-year experiences of a center of expertise in mycology. *JFungi*. 2020;6(4):274. <https://doi.org/10.3390/jof6040274>
9. Kumar U, Chauhan MP, Varma K. A clinico epidemiological study of dermatophytosis in a tertiary care center, Ujjain. *IP Indian J Clin Exp Dermatol*. 2019;5(1):89-92. DOI: 10.18231/2581-4729.2019.0019
10. Mancy A. Chronic dermatophytosis: A clinical, epidemiological, mycological study. *Our Dermatol. Online*. 2022;13(1):36-40. DOI: 10.7241/ourd.20221.7
11. Petrucelli MF, Abreu MH, Cantelli BA, Segura GG, Nishimura FG, Bitencourt TA, et al. Epidemiology and diagnostic perspectives of dermatophytoses. *JFungi*. 2020;6(4):310. <https://doi.org/10.3390/jof6040310>
12. Alfouzan W, Al-Wathiqi F, Altawalrah H, Asadzadeh M, Khan Z, Denning DW. Human Fungal Infections in Kuwait—Burden and Diagnostic Gaps. *JFungi*. 2020; 6(4):306. R. J.
13. Ogu EO, Ogunbodede TT, Iloputaife EJ. PREVALENCE OF TINEA CAPITIS INFECTION AMONG PRIMARY SCHOOL CHILDREN IN NKANU WEST LGA OF ENUGU STATE NIGERIA. *IJASTR*. 2020;5(10).
14. Ali Dawa M, Tesfa T, Weldegebreel F. Mycological Profile and Its Associated Factors Among Patients Suspected of Dermatophytosis at Bisidimo Hospital, Eastern Ethiopia. *Clin Cosmet Investig Dermatol*. 2021:1899-908. <https://doi.org/10.2147/CCID.S344846>
15. Das S, De A, Saha R, Sharma N, Khemka M, Singh S, Reja AH, Kumar P. The current Indian epidemic of dermatophytosis: A study on causative agents and sensitivity patterns. *Indian J dermatol*. 2020;65(2):118.
16. Osman M, Kasir D, Rafei R, Kassem II, Ismail MB, El Omari K, Dabboussi F, Cazer C, Papon N, Bouchara JP, Hamze M. Trends in the epidemiology of dermatophytosis in the Middle East and North Africa region. *Int J dermatol*. 2022;61(8):935-68. <https://doi.org/10.1111/ijd.15967>
17. Zhan P, Liang G, Liu W. Dermatophytes and dermatophytic infections worldwide. In *Dermatophytes and dermatophytoses 2021* (pp. 15-40). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-67421-2_2
18. Son JH, Doh JY, Han K, Kim YH, Han JH, Bang CH, Park YM, Lee JH. Risk factors of dermatophytosis among Korean adults. *Sci rep*. 2022;12(1):13444. <https://doi.org/10.1038/s41598-022-17744-5>

19. Sultan S, Shah AA, Iqbal I, Younus F, Shah IH. Dermatophytosis: an epidemiological and clinical comparative study in a tertiary care centre. IJCMR. 2020. <http://dx.doi.org/10.21276/ijcmr.2020.7.6.21>
20. Shazia Bano, Kousar Parveen, Hafiz Bashir Ahmed, Sikandar Ali Sial, Tayyaba Iqbal and Amir Bux Detho. Dermatophytosis: An Epidemiological Study in a Tertiary Care Center in Rural Sind. JPRI, 33(62A): 123-128, 2021; Article no. JPRI.81826. <https://doi.org/10.9734/jpri/2021/v33i62A35159>
21. Usman B, Rehman A, Naz I, Anees M. Prevalence and antifungal drug resistance of dermatophytes in the clinical samples from Pakistan. Acta Microbiologica et Immunologica Hungarica. 2021 Dec 2;68(4):291-6. <https://doi.org/10.1556/030.2021.01461>
22. Alshehri BA, Alamri AM, Rabaan AA, ALTawfiq JA. Epidemiology of Dermatophytes Isolated from Clinical Samples in a Hospital in Eastern Saudi Arabia: A 20Year Survey. Journal of Epidemiology and Global Health. 2021;1-8. <https://doi.org/10.1007/s44197-021-00005-5>
23. Madarasingha NP, Eriyagama S, Jayasekera PI, de Silva Welianage S, Gunasekera S, Munasingha DM, et al. Characterization of recalcitrant dermatophytosis in a multicenter study in Sri Lanka. The American Journal of Tropical Medicine and Hygiene. 2022;107(1):117. doi: 10.4269/ajtmh.21-1022
24. Rafat Z, Hashemi SJ, Saboor-Yaraghi AA, Pouragha B, Taheriniya A, Moosavi A, Roohi B, Arjmand R, Moradi A, Daie-Ghazvini R, Basiri S. A systematic review and meta-analysis on the epidemiology, casual agents and demographic characteristics of onychomycosis in Iran. Journal de Mycologie Medicale. 2019 Sep 1;29(3):265-72. <https://doi.org/10.1016/j.mycmed.2019.05.004>
25. Rezaei-Matehkolaei A, Makimura K, Hoog SD, Shidfar MR, Zaini F, Eshraghian M, et al. Molecular epidemiology of dermatophytosis in Tehran, Iran, a clinical and microbial survey. Med Mycol.2013;51(2):203-7.